



US009409058B2

(12) **United States Patent**  
**Mikura et al.**

(10) **Patent No.:** **US 9,409,058 B2**  
(45) **Date of Patent:** **\*Aug. 9, 2016**

(54) **GOLF BALL**

(75) Inventors: **Chiemi Mikura**, Kobe (JP); **Kazuhisa Fushihara**, Kobe (JP); **Mikio Yamada**, Kobe (JP)

(73) Assignee: **DUNLOP SPORTS CO. LTD.**, Kobe-Shi (JP)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 507 days.  
  
This patent is subject to a terminal disclaimer.

4,844,471 A	7/1989	Terence et al.
4,852,884 A	8/1989	Sullivan
5,018,740 A	5/1991	Sullivan
5,184,828 A	2/1993	Kim et al.
5,403,010 A	4/1995	Yabuki et al.
5,816,944 A	10/1998	Asakura et al.
5,830,085 A	11/1998	Higuchi et al.

(Continued)

#### FOREIGN PATENT DOCUMENTS

EP	1358914 A1	11/2003
JP	61-37178 A	2/1986

(Continued)

#### OTHER PUBLICATIONS

(21) Appl. No.: **13/338,868**

(22) Filed: **Dec. 28, 2011**

(65) **Prior Publication Data**

US 2012/0172150 A1 Jul. 5, 2012

(30) **Foreign Application Priority Data**

Dec. 29, 2010 (JP) ..... 2010-294590

(51) **Int. Cl.**

**A63B 37/06** (2006.01)

**A63B 37/00** (2006.01)

(52) **U.S. Cl.**

CPC ..... **A63B 37/0054** (2013.01); **A63B 37/0062** (2013.01); **A63B 37/0074** (2013.01)

(58) **Field of Classification Search**

CPC ..... A63B 37/0062; A63B 37/0063

USPC ..... 473/377, 351

See application file for complete search history.

(56) **References Cited**

#### U.S. PATENT DOCUMENTS

4,688,801 A	8/1987	Reiter
4,726,590 A	2/1988	Molitor
4,838,556 A	6/1989	Sullivan

Chinese Office Action, dated Dec. 16, 2013, for Chinese Application No. 201110411055.8.

(Continued)

*Primary Examiner* — Raeann Gorden

(74) *Attorney, Agent, or Firm* — Birch, Stewart, Kolasch & Birch, LLP

(57)

#### ABSTRACT

An object of the present invention is to provide a golf ball having a great flight distance on driver shots. The present invention provides a golf ball having a spherical core and at least one cover layer covering the spherical core, wherein when JIS-C hardness, which is measured at nine points obtained by dividing a radius of the spherical core into equal parts having 12.5% intervals therebetween, is plotted against distance (%) from a core center, the spherical core is such that  $R^2$  of a linear approximation curve obtained from the least square method is 0.95 or higher, and a hardness difference between a core surface hardness and a core central hardness is 15 or higher in JIS-C hardness.

**14 Claims, 20 Drawing Sheets**

